THE

BOSTON MEDICAL AND SURGICAL JOURNAL.

VOL. LXVI. THURSDAY, FEBRUARY 6, 1862. No. 1.

THE HISTORY, PREPARATION AND THERAPEUTICAL USES OF THE CITRO-AMMONIACAL PYROPHOSPHATE OF IRON, NAMED IN BRIEF PYROPHOSPHATE OF IRON.*

BY E. N. CHAPMAN, A.M., M.D., PROF. OF THERAPEUTICS AND MATERIA MEDICA, PROF. OF CLINICAL OBSTETRICS, AND PHYSICIAN IN THE LONG ISLAND COLLEGE HOSPITAL.

[Communicated for the Boston Medical and Surgical Journal.]

IT is only a few years since any attempts, successful at least, have been made to obtain the pyrophosphatic ferruginous salts. No earlier than the year 1847 M. Persoz published a noteworthy memoir on the signal advantages that might be attained, in his estimation, from the medicinal employment of the pyrophosphate of iron. This salt, which had presented almost insuperable difficulties from its insolubility, was discovered by him to be rendered sparingly soluble by association with the pyrophosphate of soda.

Subsequently, in the year 1849, M. Leras (Inspecteur d'Académie à Quimper et Docteur des Sciences) presented to the Institute at Paris a paper on this preparation—the pyrophosphate of iron and soda—in which he claimed for it marked superiority over all the other forms of iron; particularly in regard to its more ready and certain absorption. Leras's salt is, in solution, of a white color; has an unpleasant saline taste from the soda, and possesses but feeble powers as a tonic. The solubility of the iron is slight by this chemical union. Only two and a half grains of each salt are contained in a fluid ounce of the preparation.

Following the appearance of M. Leras's memoir, attempts were made by several chemists to render the pyrophosphate of iron soluble by the intervention of some other chemical agent, but unsuccessfully. In 1857, M. Robiquet discovered that by associating the pyrophosphate of iron with the citrate of ammonia, a preparation was attained that was, according to hisassertion, tasteless; soluble in almost any proportions, in water, and unchangeable by keeping.

* The historical portion of this article is gathered from the Journal de Chimie Medicale, May, 1857; Journal de Pharmacie et de Chimie, October, 1858; and the American Journal of Pharmacy, September, 1857.

He also claimed that the iron existed in a latent or disguised state, by a peculiar chemical union, which better fitted it for absorption, and enabled us to administer it in connection with many agents that were incompatible with all the other salts of this metal. He stated that no precipitate was caused by cinchona, vegetable bitters or astringents, ammonia and the carbonate of potash or soda; and that the iron could not be detected by ordinary reagents. Having procured, through the kindness of my friend, Mr. E. Fougera, a sample of Robiquet's syrup from his agents in Paris, I found it of a straw color, with a slightly greenish cast, neutral to test paper, and nearly devoid of taste, excepting from the sugar it contained. Ammonia turned this syrup to a black color immediately, but carbonate of soda or potash only caused this change by standing several hours. The dark hue remained permanent, without the formation of a sediment. All vegetable infusions or tinctures containing tannin caused a precipitation of iron, either directly or after a few hours, excepting the wine of bark, which being added to the syrup in an equal or less proportion, no change was observable in ninety days. When the wine was added in excess, an inky-colored mixture was formed, and this the more rapidly the greater that excess. In fact, contrary to the assertions of Robiquet, tannin was found to be as sensitive a test for iron in his salt as in any of the others of this metal. One drop of his syrup added to twelve ounces of water containing a small proportion of tannin, caused a notable change in color. We must, therefore, in prescribing the pyrophosphate, avoid the same articles in combination that are incompatible with any of the martial salts, excepting the wine of bark in a less or equal proportion of the syrup.*

The first attempts in this country to manufacture this new salt failed to conform to all the steps of the process. In the *American Journal of Pharmacy*, Sept., 1857, the Editor states that "the want of clearness" in Robiquet's paper "leaves one in doubt in regard to the mode of making the preparation"; that the neutral citrate of ammonia would not dissolve the pyrophosphate, but that it was requisite to add the ammonia in excess.

Robiquet's formula is as follows:—dissolve by heat in a neutral solution of the citrate of ammonia a determinate proportion of the pyrophosphate of iron. When this becomes clear, allow it to boil for a few minutes; filter and add sugar. This syrup should be of a straw color, with a slightly greenish cast, and devoid of taste. By rendering the citrate of ammonia alkaline, "a reddish-brown solution, with a slight ammoniacal saline taste," is obtained.

It will be found that the pyrophosphate will dissolve readily in the citrate of ammonia, with either the alkali or the acid in excess. In neither case shall we have a tasteless syrup, or one that possesses the advantages of the genuine salt. The alkalinity or acidity of the preparation would render it objectionable in many cases of dis-

* Robiquet's syrup contains about one grain to the drachm.

ease; the first gives it an inelegant and unsightly appearance, and a repugnant taste, which destroys its great recommendation—tastelessness—that so well adapts it for captious stomachs and for the case of children; the second might cause in certain habits gastric derangement, disorder the digestion and produce griping, flatulence and purging. It is requisite, in testing the claims of any new remedy to our notice, to have it conformed rigidly to a fixed standard; especially where, as in the present instance, iron, that would be efficacious in any combination, enters into the formula, and our object is to discover whether a particular ferruginous salt has any advantages over others. Having used extensively, both in private and public practice, for the last three years, this new preparation, and having observed in it powers over and above those possessed by iron singly, I was anxious to discover whether it was possible to conform strictly with the formula of Robiquet. By the kindness of Mr. E. Fougera, Pharmaceutist of the Long Island College Hospital, who had supplied me with this syrup, conforming in color and tastelessness to the imported article, I was allowed the opportunity of witnessing his mode of preparation.

The pyrophosphate of iron, a white and tasteless powder, resembling prepared chalk, was obtained as a gelatinous precipitate in the reaction between the pyrophosphate of soda and the tersulphate of iron in solution. A given proportion of citric acid in solution is neutralized by liquor ammoniæ, as shown by test paper, when the pyrophosphate is added, and the liquid boiled until the salt is dissolved. We now have the citro-ammoniacal pyrophosphate of iron in solution; from which we may obtain the solid salt by evaporating to a thick consistency, and then spreading the product on large plates of glass. It takes the form of lamellæ of greater or less thickness; these, when thin, are flaky, brittle, and of a yellowish-green color, but when more massive are of a duller and deeper green, and of a resinous appearance. This salt, which has a slightly saline taste, may be made into pills, or dissolved in water in any proportion, by the aid of heat. The solution does not require any addition to disguise it, as the saline taste is trivial and not unpleasant, though sugar and a flavoring ingredient may be added to suit the caprices of patients. Syrup completely conceals the iron and renders the preparation tasteless. This may be made of any desired strength. I usually give from three to five grains of the pyrophosphate three or four times a day.

The solid salt contains its ingredients in the following proportions to the hundred parts:—

Pyrophosphate of iron (anhydrous) - - - - -	48.8
Citrate of ammonia (neutral) - - - - - - -	34.66
Water in combination - - - - - - - - -	16.54
Total - - - - - - - - - - -	100.00*

* See American Journal of Pharmacy, January, 1860, p. 39.

The 48.8 parts of the pyrophosphate contain 7.27 of metallic iron. It is a sesqui-salt, represented by the formula $2\,Fe^2\,O^3, 3PO^5$, and formed by the reaction between three equivalents of the pyrophosphate of soda $3\,(2\,NaO, PO^5)$ and two of the tersulphate of iron $2\,(Fe^2\,O^3, 3\,SO^3)$.

The citro-ammoniacal pyrophosphate of iron affords certain marked advantages over the preparations of iron hitherto in use. Its tastelessness, in solution with sugar, and elegant appearance, in our day, when the nauseous doses of the older practitioners will not be tolerated, is an important item in the case of children, or adults even, when the employment of a remedy is demanded for a period of time. There is every reason for presenting our medicines in as palatable and pleasant a form as possible. In addition, there are many persons of a nervous, delicate organization, particularly females, who cannot take the ordinary preparations of iron. They disorder the stomach—in their language are too heating—and thus not only fail to be assimilated, but, by perverting the gastric and intestinal secretions, seriously interfere with the digestion. Hence, instead of enriching the blood by new materials, we are merely cutting off the original supply, imperfect as it is, and making the gastric surfaces a centre of morbid irritation. We observe a similar but more complete abeyance of the nutritive functions, in most patients much reduced by an exhausting disease. However much iron may be indicated, it cannot be borne, much less appropriated by the absorbents, until the digestion is restored by bitters and stimulants.

A marked peculiarity in the pyrophosphate of iron is the fact that it will, scarcely ever, in any of these cases disagree, and very frequently patients who cannot tolerate the ordinary forms of iron, will bear this well, and receive great benefit from its use. Like the others, it may fail to add to the blood a richer pabulum, from some fault in the vital processes of nutrition; yet unlike these, it will not aggravate the disorder for the relief of which it was given. Where the digestive powers are unimpaired, it matters little what preparation is selected, as far as its tonic action on the blood is concerned; since all—certain chemical reasons to the contrary notwithstanding—will fulfil this indication satisfactorily. The new salt will supply the iron to the blood-globules as promptly, but not more so, than the others.

It has, however, another and more important property, which has entirely escaped attention; that adds new virtues to the iron and bestows on this special compound advantages possessed by none other in the Materia Medica. These arise from the pyrophosphoric acid. This acid, or the element, phosphorus—which, has not been definitely determined by chemists—exists alone in a free state in the great ganglionic nervous centres. According to Frémy, the phosphorus is combined with the brain-fat, forming what he calls the oleo-phosphoric acid. This, by boiling for some time in alcohol or water, splits up into olein and phosphoric acid. This brain-fat,

cerebric acid or cerebrin, is the protein-body of the nerve-centres, and its great peculiarity is the amount of phosphorus it contains. Frémy makes it 9 parts to a 1000. There are many other protein-bodies with specific properties that affect peculiar vital transformations, such as, for example, the nitrogenized element in the gastric juice, the pancreatic secretion, casein and the albumen of eggs or blood. This nitrogenized element, by its presence, without any chemical union with the other ingredients, forms a great diversity of new compounds from the same plasma; as, for example, the various secretions from the same blood.

It is, at the present time, tolerably well established (Virchow, Kölliker, Bennett) that all life starts from and is sustained by the agency of cell-growth, and that even morbid actions form no exceptions, but are carried on by the same organic forces. These cells, in their walls, nuclei and contents, contain a peculiar and distinctive protein-body; and being distributed universally in the solids and fluids of the body, are the great vital factors—the pervading life-force—by which organic functions are manifested. Formerly, it was thought that the peculiarities of this nitrogenized, albumenoid substance or protein-body, were due to the nitrogen in its composition, but it has since been found that phosphorus and sulphur are usually present. Both of these are contained in the albumen of the egg or of the blood, and in the casein of milk—fluids that contain every element necessary for the perfect development of living creatures. Milk is the most perfect type of the various constituents and their proportions that should exist in our diet.

Nitrogenized elements in Albumen (Mulder).		Nitrogenized elements in Casein.	
Carbon	52.97	Carbon	53.61
Hydrogen	6.81	Hydrogen	7.11
Nitrogen	15.11	Nitrogen	15.47
Oxygen	23.54	Oxygen	17.99
Sulphur	1.57	Sulphur	1.11
Phosphorus	.40	Phosphorus	.74

It thus appears evident that phosphorus holds an important place amongst the other elements that contribute to cell-life and nerve-power; but as all nitrogenized food contains it in the same proportions as it exists in the human organism, we cannot select a better remedy for defective nutrition than these ready-formed products. We should naturally suppose, what I have found by experience, that animal food would be the proper agent to restore flesh to an emaciated patient, since it contains each constituent necessary to its formation. At least, I have not found the phosphoric acid to add anything to the iron in such cases. Phosphoric acid united to a base—lime—exists in all the fluids and solids of the body. The phosphate of lime is formed in the vegetable from the elements in the soil; whence we derive it directly, or secondarily, through animals who have fed upon them. The phosphatic salts are received as such, and are probably carried through the blood to the solids, particularly to the bones, without suffering decomposition and re-construction; excepting, per-

haps, in a small ratio. It scarcely could be requisite, when the supply presented to the stomach is always so abundant, to administer any phosphatic salt for the purpose of adding the phosphate of lime to the blood and thence to the bones. The defect of this saline in the bones is not due to the lack of the elements in the food, but to a fault in nutrition. When this is obviated, the common articles of diet will supply all the materials required. We conclude, therefore, that phosphorus is not demanded medicinally to build up the nitrogenized tissues of our bodies, nor are the phosphates to form the bones, since they are all presented to the blood in great abundance.

Phosphorus is regarded by therapeutical writers as a cerebral stimulant, exalting nerve-power directly, but the action of the heart indirectly, and only in a moderate degree beyond the normal tension. Of all the organs, the reproductive are most sensibly affected; a fact satisfactorily accounted for in the male by our knowing that the semen contains, according to Kölliker, over two per cent of a phosphoretted fat. As throughout nature nothing is without a use, and every element has an importance, though we may fail to discover it; so we may safely conclude that phosphorus must exist in the nervous centres and the spermatic fluid as an integral constituent in their chemical composition. Probably it plays an important part in the normal excitability, and is intimately connected with the manifestation of mind, and the generation of the nervous influence.

In many conditions occurring in disease there might be a lack of this constituent, in a due proportion; precisely as there is of iron in anæmic states of the blood, when our only resource would be to present it in some assimilable form to the system, as there are no substitutes for the elementary bodies. In the case of phosphorus, here has always lain the difficulty: undergoing a slow oxidation or combustion at ordinary temperatures, even when floating on water, its substance would be burnt in the stomach, and a small particle adhering to the mucous surface would occasion irritation or inflammation. It could not be absorbed as phosphorus, and could only be remedial by the phosphorous and phosphoric acids that are formed. These would undoubtedly combine in the stomach with earthy or alkaline bases, and be reduced to the state of the phosphates existing in the food. These, we know, suffer but little change in the blood, being found unchanged in all the solids and fluids, but particularly in the bones. From them, however, in normal, healthy nutrition, the phosphoric acid in the nerve-centres must be derived. Should there be a great depression of vital power, the acid is not liberated from its combination, in the same manner, as, we know, the iron is not, from the the materials for digestion. The iron set free by assimilation in the blood is appropriated by the hæmatin; the phosphorus by the brain-fat. In hydræmia we give the iron in an easily assimilated form; one that does not tax the vital powers in separating it from a chemical combination, and straightway the blood begins to regain its color, and strength and vigor are infused into

every organ. When a certain stage of recuperation has been attained, as shown by a more florid blood and a stronger pulse, the iron will be readily appropriated from the food, which, normally, is the source whence it is always obtained. The fault, originally, lay not in the absence of iron in the substances presented to the blood, but in an imperfect elaborating power, which failed to assimilate it. In like manner, I think, phosphoric acid may, from the same defect, not be separated from its compounds, and thus the ganglionic nervous centres be wanting in their normal stimulus. Hence would arise many nervous and neuralgic diseases, and nervous complications in many forms of debility. It is necessary for us to pass the phosphoric acid into the blood. This we can only do by giving it in a saline state, with a base that would be assimilated, and thus set it free. This is accomplished by the iron, which we know, in ordinary medicinal doses, is used up in the blood; in other words, is appropriated by the hæmatin, and cannot be detected by any tests. It is a natural constituent in the red globules, and, consequently, not being foreign to the body, behaves precisely as any of the other elementary principles that form its structure. Strictly speaking, it is a food, and must be supplied as much as starch, sugar, oils and flesh.

It is the experience of most practical men that far greater benefit arises from the use of cod-liver oil than any other oil in a variety of diseases; particularly such as are marked by a defective assimilation and a cachectic and depraved nutrition. Most patients, though they may derive no permanent benefit from its employment, improve in appearance, and gain, often in a remarkable degree, in weight. This is, I may say, universal when their digestive powers are sufficiently strong to appropriate the oil. Its manifest good effects have been ascribed to the iodine which it contains, though this exists in an infinitesimal ratio, much too small to act medicinally, according to our ideas of the dose of this element requisite to affect the system. The phosphorus and phosphoric acid, present in a much larger proportion, have been entirely overlooked; whereas, they probably constitute the main difference between it and ordinary oils. This may be more apparent by comparing the following analyses by Dr. De Jongh:

COD-LIVER OIL.

	Pale.	Pale Brown.	Brown.
Iodine,	$\frac{374}{1000000}$	$\frac{406}{1000000}$	$\frac{295}{1000000}$
Phosphoric Acid,	$\frac{313}{1000000}$	$\frac{789}{1000000}$	$\frac{536}{1000000}$
Phosphorus,	$\frac{212}{1000000}$	$\frac{114}{1000000}$	$\frac{74}{1000000}$

We thus see that phosphorus and phosphoric acid together, are found in a greater proportion than 1 part to a 1000, and that this much exceeds that of iodine. Since the proportion of phosphorus in the nerve-centres and in the protein-bodies of the cells is small; even this amount, apparently so trivial, would be ample to supply their deficiencies and thus correct faults in nutrition.

It is thought by physiologists that oil is only formed into an

emulsion in the intestines by the pancreatic juice; thus absorbed, and eventually deposited in the cellular tissue in its original state, without experiencing any chemical change. When required by the wants of the system, it is retaken into the circulation, oxidized or burnt in the tissues, and thus becomes the source of animal heat.

Now it is a recognized therapeutical fact, that certain combinations of remedies give a direction and a sphere of operation to their constituents; differing, often notably, from that of the articles when used singly. For instance, the action of the iodide of iron is not expressed by that of iron + that of iodine. By their union not only are new medicinal properties developed, but the iodine, which is speedily passed off through the kidneys, leads the iron, as it were, to seek an exit by the same channel; though the ordinary salts of this metal must be given in very large doses to be detected in the urine. Besides, it must be recollected, that the phosphorus in the oil of the cod, has been united with it by a vital chemistry; and hence will be readily absorbed and deposited in the fat cells, unchanged. Cell-life, being dependent on a protein-body, which contains a certain though small proportion of phosphorus, will be stimulated, by which means emaciated patients will gain largely in fat. When this oil is, in the processes of life, burnt in the tissues, the oxidized phosphorus will both stimulate the nervous centres and the cell-life of every organ, and thus the activity of all the functions will be strengthened and invigorated. This liberation of phosphorus will be slight compared with that set free in the blood by pyrophosphate of iron; since the iron is immediately assimilated and appropriated in the processes of nutrition by the red-globules of the blood. Hence we discover the reason why the oil will augment the deposition of the fat, and, when oxidized, will augment the activity of all the various functions, and why the stimulation from the oil is far less than that from the pyrophosphate of iron. Thus these two medicines afford a means of introducing phosphorus and its acid into the system, a point otherwise difficult to be attained; and secure certain peculiar medicinal results through the nature of their combinations.

Practical, clinical facts, the only reliable foundation for medical practice, confirm, in my experience, the views thus presented on a therapeutical and physiological basis.

We have employed the citro-ammoniacal pyrophosphate of iron, in certain conditions, with the most marked and gratifying results.

Whenever the blood becomes thin and watery, there are, almost invariably, troublesome attendant symptoms, seriously retarding the restoration of the patient to health. In all, there will be a lack of nerve-power, from the hydræmic state of the circulation. Hence, could we, temporarily, augment the stimulating properties of the blood, whilst we are administering the iron, we should prepare the way and present the conditions required for its assimilation, which otherwise might be impossible. Experience has taught most physi-

cians this practical fact, and the indications have usually been fulfilled by the simultaneous use of wine and iron. We have found the pyrophosphate singularly appropriate under these circumstances, and as superior as a natural excitant must ever be over any substitute we may devise. Persons who have been over-worked by mental application and prostrated by disquietude and care, or persons who have a shattered nerve-power from some constant source of bodily suffering, have a thousand anomalous symptoms dependent on an imperfectly generated and distributed nerve-power—such as wakefulness, trembling spasmodic movements, palpitations, &c. For this class of symptoms, the pyrophosphate of iron often affords relief in two or three days; and thus prepares the way for the ultimate cure that may be expected from the martial salts. Many times, patients have expressed wonder at the calming and tranquillizing effects of the medicine; not only in mere functional aberrations and irregularities, but also in cases where actual disease existed in the nerve-centres. In both instances, the stimulation is immediate and transient, and can be of no avail, except by removing irregular nervous distribution; whilst the iron is appropriated more readily by the organic forces now freed from a great source of disorder. A lady in this city, with spinal meningitis in the cervical region, had great feebleness and trembling, but especially paroxysms of an asthmatic shortness of breath, that greatly interfered with the aëration of the blood. The first trial with this remedy removed, in a few days, the severity of the symptoms; so much so, that the patient was enabled to leave her bed. Her breathing was hurried only on exertion. The remedy becoming less potent in subsequent attacks, and then eventually quite useless, was abandoned, and other means were resorted to with the same ill success. The patient, after being under my care, without benefit, for three months, moved into the country, and nothing has been heard of her since. In other instances of anæmia, where time showed an organic basis for the nervousness, a temporary advantage has been gained by this form of iron; showing the stimulation afforded by it to the brain and spinal marrow. This stimulation, although only temporary, is of permanent value in all functional disorders of the nerve-power, where, in the mean time, we can rectify the states on which they are dependent. This is shown markedly in anæmia and chorea united. A young girl, 16 years of age, presented herself at the Hospital Clinique with the symptoms of anæmia, amenorrhœa and chorea. She had been unwell at two periods, four months ago; but since then her turns had failed, and she had become affected by these involuntary motions, which now were so great and uncontrollable as nearly to forbid her standing or walking. She was ordered laxatives for the constipation, which was obstinate; and the pyrophosphate of iron in five-grain doses, after each meal. This was the only treatment, from first to last. Her appetite, which had been capricious and uncertain, returned; the torpor of the bowels became less obstinate,

and the involuntary jerkings of the muscles subsided to such a degree that the girl in two weeks walked to the Hospital unattended. In six weeks the menses returned, when the choreaic movements, which had become moderate, were greatly increased during their continuance. In the interval there was a continuous improvement, as the color of the face returned, but only a slight exacerbation during the next period. In three months the restoration to health was perfect. Perhaps the common forms of iron, as I have seen in two or three instances, might have been efficacious and attended with success, but I am confident the first stage of the cure would have been more tedious, from the constant muscular action which exhausts the patient. By the tranquillizing power of the phosphoric acid, the movements were moderated; the patient was enabled to fall asleep readily, which she could not do before, and the assimilation was strengthened, so that food and iron rapidly improved the blood.

In one other case of chorea and anæmia, the same happy result followed this course of treatment.

In palpitation of the heart in anæmic subjects, I have seen many instances of the power of this remedy in removing this symptom long before the blood was restored to its normal condition. But palpitation, when not due to impoverished blood entirely, may be, often times, equally amenable to this remedy.

A lady of this city, 45 years of age, feeble, emaciated, and the subject of paralysis agitans for many years, was tormented by an aggravated form of palpitation of the heart. This, at times, was very severe and persistent, and never benefited by a variety of medicines prescribed by different physicians. The cause of this irregular and tumultuous action was evidently due to a defect in the nervous influence. The pyrophosphate of iron gave her the most prompt and perfect relief, so much so, that she sent a person affected with this disease to my office to obtain the same prescriptions. In this case, also, the result was equally satisfactory. In even more grave disorders of the heart, the value of this remedy has been signally shown.

A young gentleman, 23 years of age, came to my office, suffering fearfully from angina pectoris. He was first attacked five years previously, whilst in the country, and was obliged to give up his employment and travel for his health. After six months respite he obtained some relief, but from that time he had been followed by returns of the paroxysms at frequent intervals, though much less severe until of late, when they had become more grave than ever before. There was a sense of agony; a fear of impending death; and he was conscious of an irregular, tumultuous, labored throbbing of his heart, even in sleep, which was fitful, unrefreshing and disturbed by frightful dreams. His countenance was haggard and bespoke the utmost dejection, and he felt as though his chest was tightly bound by a cord, and as if each pulsation of his heart would be the last.

On examination, no organic disease could be discovered. The heart contracted tumultuously—by fits and starts—with a rolling, tumbling, uncertain action, but spasmodically, and with a sharp, metallic ring. The pulse was irregular and intermittent, and the volume of blood in the artery was uncertain and unequal.

Latterly the young man had been employed in a wholesale dry goods store, in New York, and had passed most of the day on an underground floor. As he appeared to suffer from considerable gastric and hepatic disorder, two cathartic doses of blue mass were given, and followed by vegetable bitters and antacids. These failing, he was ordered assafœtida, valerian, camphor, &c., with the like ill result. At this time, two weeks from his first visit, he was much worse, so much so, that he fell on the floor insensible one afternoon after returning from his business. He was now directed to take the pyrophosphate of iron, in five-grain doses, three times daily, and to omit all other medicines whatsoever. The patient remained under the same circumstances as to air, diet, exercise, &c., and still persisted, from a fear of losing his situation, in going to the store every day. There was a sensible amelioration in the severity of his symptoms almost immediately; which became very apparent in four or five days. Insensibly he began to sleep with tolerable comfort, and to experience a more regular and equable action of the heart. At times, he would lose a sense of his condition, which ever had followed him like a malignant spirit. The change in his countenance, in the state of his pulse and rhythm of the heart, as discovered by auscultation, was remarkable. The improvement was steady but rapid, until the restoration to health was complete, which took place in four weeks, without any change in, or any addition to, the prescription. Now, after an interval of more than two years, he remains in perfect health, and was enabled to rush to arms, with thousands of other compatriots, for the defence of the old flag and the constitution of our fathers. He endured three months' service as readily as the others. Since his return I found, on examination, that his heart acts perfectly and normally.

A young married woman, never pregnant, 34 years of age, was admitted into the Hospital a year since. She was thought by her physicians to have an aggravated, organic heart disease, that had nearly run its course. Her present illness dated back some eight months, and apparently commenced with gastric and hepatic disorder, which gradually induced despondency, nervousness, and palpitation of the heart. She had a sallow complexion, loaded tongue, vomiting, which was frequent, of a bitter matter; a strong, tumultuous and irregular action of the heart, with a metallic ring; a sense of great suffering and a fear of impending death. She was gloomy, hopeless, hysterical, with many shifting neuralgic pains. Shortly before her admission she lost the use of her lower extremities—could not stand, though when in bed she could draw up her feet, but with great effort and difficulty. I could discover in her case no evi-

dences of organic disease, and was inclined to think that when the functional disorders of the liver and digestive organs were corrected, it would be possible to mitigate, at least, the irregular action of the nervous system which was supposed to be mostly of a hysterical character. A variety of means, such as blue mass, bismuth, creosote, quinine and bitters were employed for two weeks or more, to correct the state of the stomach, check the vomiting, and restore the digestion—which objects were partially attained; but the nerve-aberrations continued the same as at first. The pyrophosphate was now given conjointly with vegetable bitters and good diet. The same happy result followed as in the last case. Gradually the use of her limbs, and the regular, natural action of her heart were regained, though from the hysterical element in her case, the restoration to health was not as perfect or permanent as that of the young man just mentioned. She dwelt constantly on her troubles, and being much alone and neglectful of exercise, she relapsed, six months after dismissal, and was again treated in the same way, and in three weeks regained her usual health. During the present month I was called to her house and found her with the old symptoms, which she said had been coming on ever since the absence of her husband in the army. She requested the same medicine which had, the other times, been followed by such marked relief to the symptoms. Its power was equally apparent as before. For all the varied and anomalous symptoms of hysterical patients, which are usually some phase of irregular distribution of the nervous influence, the pyrophosphate acts with singular efficiency; diffusing and equalizing the nerve-power, and thus secondarily restoring a more active capillary circulation and a more healthful play of all the functions. Cases illustrative of this point are unnecessary in the milder forms of nervous disease, since the claims of our remedy are sufficiently vindicated in the severer ones hitherto mentioned.

The pyrophosphate of iron has another property scarcely to be expected, and one we should never discover except by actual observation. All of the common preparations of iron are apt to oppress the stomach, coat the tongue and destroy the appetite, especially when the patient is much debilitated. Many, from a delicate, sensitive organization, cannot, under any circumstances, take iron with profit, it being, in their language, too heating. The pyrophosphate is friendly to the stomach, will never cause any irritation of the gastric surfaces, and, to our knowledge, has never disagreed with any patient, however incompatible the other forms may have been. Besides, it appears to possess a tonic power, and will restore the appetite and digestion after the failure of bitters, quinine, wine, &c., often in extreme cases of anæmia, amenorrhœa and chlorosis, as we have witnessed in many instances in our obstetric clinique. It seemed to afford just the grade of stimulus required by the stomach, and the improvement, thus initiated, continued without interruption, under this single remedy, to the complete cure of the

patient. This acceptability, friendliness, corrigent and roborant action of this form of iron on the digestive organs is a valuable peculiarity which renders it, in many persons and in many states of disease, superior to all others, and perhaps to any drug whatsoever. Besides, its tastelessness, when dissolved in syrup, is a great recommendation in this age of sugar, when patients desire to die *sweetly*, and will not endure anything nauseous or unpleasant, though death be knocking at the door. This we might expect in children who *bring* up their parents to a tolerably high state of discipline, and issue their orders of command from the cabinet councils of the nursery. We medical men, taking the world as we find it, are obliged to render our doses as palatable as possible for babies, both great and small. This object, without detriment in the choice of our means, is singularly and notably attained by the use of the syrup of the pyrophosphate of iron.

Brooklyn, N. Y., Jan. 27th, 1862.

TWO CASES; IN BOTH OF WHICH VERY UNUSUAL PRESENTATIONS WERE ASSOCIATED WITH ABNORNAL LENGTH OF THE FUNIS.

[Communicated for the Boston Medical and Surgical Journal.]

In the course of nearly seventeen years' active practice, I have not met with any instances where the variation from the normal length of the cord was so remarkable as in the two cases I am about, briefly, to narrate; and the fact that with both were associated very unusual presentations of the child, lead me to consider them not unworthy of record.

June 19th, 1861, I was called to Brookline, to visit a woman of between thirty and forty years of age, who was in labor. I arrived at her residence about ten in the evening. She informed me that she had previously, without unusual trouble, given birth to several children; that labor had commenced about twenty-four hours before; the pains had been frequent and "strong" from the commencement of labor till noon of the day of my visit, when the liquor amnii had been suddenly evacuated, and the pains, as suddenly ceasing entirely, had not in the slightest degree returned. She was much exhausted, and in a state of great anxiety and apprehension. On examination, I found the cord prolapsed, and hanging from the vulva; it was flaccid and pulseless. The right hand also protruded, and the shoulder was found at the brim. The os uteri was fully dilated, no portion of it being accessible to the finger. I represented to the patient and her friends the state of the case, and the certainty and ease with which she could be relieved. The nervous condition of the patient seemed to demand that, contrary to my usual practice in obstetric cases, ether should be administered. Dr. Francis, of Brookline, promptly and kindly responded to my message for his assistance. The patient being fully etherized, I turned and brought away

the child with a facility which, from the entire evacuation of the "waters," I had hardly anticipated, but which was easily accounted for by the fact that the uterus was perfectly passive, not contracting at all until after the removal of the child, and *then* under the influence of a large dose of ergot which was administered immediately before the commencement of etherization. As soon as the uterus was well contracted, the placenta was removed without difficulty. The cord, including two inches of the fœtal end remaining attached to the child's body, measured just sixty-one inches.* I saw the woman but once more, on the morning of the following day, in the afternoon of which I was obliged to start for Virginia. She was then perfectly comfortable, and, as I have since been informed, continued so and made a perfect recovery. I may mention that the case had been, before my seeing it, in the care of a midwife. When the waters were evacuated, the pains ceased, and the cord and hand prolapsed, alarm had been felt, and a passing physician called in, who stated the case to the patient, and urged the immediate performance of version; this was peremptorily refused, and he, very properly, declined further connection with the case.

Jan. 14th, 1862, about 7, P. M., was called to see Mrs. G., aged 31. Has had four children; nothing unusual had complicated any previous confinement; had now been in labor for some ten hours; the pains had not been at all urgent, however, till within four hours. About twenty minutes before my arrival the "waters" had "broken," and the midwife in attendance, discovering that something was wrong, had, with great honesty, admitted the necessity of calling a physician, and recommended that I should be sent for. I found, on examination, that the head was presenting, the face to the right sacro-iliac junction; but beside the head, the right hand and foot also presented; they were both much tumefied; the hand lay under the pubic arch, a little in front of the ear; the foot immediately behind it. I managed to push the hand, with some difficulty, above the brim, but the foot could not so easily be got out of the way, and, as the child was evidently quite small, and there seemed no reason to doubt that, as matters stood, labor would be soon accomplished without further interference, I forbore any considerable attempts to replace it. The child was expelled in about three quarters of an hour. On account of the shortness of the cord, it was found barely possible to remove it entirely from the vagina. The funis was cut an inch and a quarter from the surface of the abdomen, and the placenta removed in a few minutes, without difficulty. A careful measurement of the cord showed its entire length to be thirteen inches. On examining the right arm, nothing unusual was noted except the

* I have not consulted the books, but believe this to have been one of the very longest cords of which mention has been made. I recall but one longer, of sixty-three or sixty-four inches, which occurred, I think, in the practice of Professor Storer, of Boston, and is mentioned, if I mistake not, in Dr. Churchill's book. I handed the present one to Prof. Storer, the day after my attendance on the case, with the wish that it might be presented to the notice of the Obstetrical Society. Whether it was so presented, or what disposition was made of it, I do not know, nor should I have given it a thought, were it not that Prof. Jackson, in conversation, showed great interest in the case, and expressed a hope that it might be preserved.

discolored and swollen condition of the hand, but the leg was found to be, not flexed, but perfectly straight, or rather, capable of being made *perfectly* straight without effort, while the left arm could not, even by considerable effort, be *so* straightened out. It was evident from this, that the malposition must have been one of very long continuance.* I may conclude the narrative of this case by saying that the labor was premature; the infant had the usual appearance of children born at the end of the seventh month, and, as the mother's last menstruation had ceased at the end of May, this was probably not far from its intra-uterine age. It was very feeble, and survived about thirty-six hours.

I do not propose to speculate on the possible relation between the very remarkable deviations from the usual length of the cord† in these cases, and the peculiarity of the presentations, but it would seem as if there must have been some such relation—that the coincidence must have been more than merely accidental; at any rate, I think you will agree with me in regarding the cases as very curious, and will not consider even this hastily written report of them unworthy of publication. I regret that I did not take notes of the first case; I report it, as well as the other, from memory, but do not think I have omitted any essential facts. HENRY A. MARTIN.

Roxbury, Jan. 23d, 1862.

"NEW SURGICAL PRINCIPLES."

[Communicated for the Boston Medical and Surgical Journal.]

MESSRS. EDITORS,—It has been said that "there is nothing new under the sun"; and when we see the new things of each day successively shown to have been broached before, we feel like subscribing to the adage. I think, however, the principal reason for the saying, or the cause of its being so near a truism, is that self-styled *conservatism* so frequently merges into *fogyism* that it keeps new things from the sunlight until they become old. This is my explanation of the matter, and, as you see, it reflects no credit upon the critics who smother merit by "systematic silence." I am led to make these remarks by observing the course taken by the profession with regard to certain "New Surgical Principles," so called, which were presented for discussion some months ago, by Prof. Cooper, of San Francisco. Though these "principles" have now been before the profession for six months or more, and have been copied into most of the medical journals of the country, there has not been a word, that I know of—*pro* or *con*—expressed by either medical or surgical

* The intelligent reader will hardly fail to recall, in this connection, Prof. Simpson's account of a case in which labor was seriously impeded by a very unusual position of one of the arms of the child. In that report (not now at hand), the great ease with which the misplaced arm could be placed in the abnormal attitude, while the other could not be so placed, is referred to.

† The "average" length of the funis is stated at eighteen to twenty inches. Without pretending to having given the subject much consideration, I feel very confident that a cord less than eighteen or twenty inches in length, is very rarely observed.

society, or prominent individual authority, with regard to them. Even the journals copying them have not risked a passing opinion on them, but barely repeated them—"*and ne'er spak mair.*"

How are we to construe this "dead silence"? Is it that the subject is unimportant? There is none to answer affirmatively to that, certainly. Is it that medical bodies of such acknowledged distinction and ability as the "New York Academy of Medicine," the "Medical and Surgical Society of New York," or the "Boston Society for Medical Improvement," consider the subject or its discussion so far above their powers that modesty or diffidence has closed their mouths? If so, either their diffidence or their ignorance is more profound than most people give them credit for—in short, that cannot be the cause. And while I would not do them the injustice to suppose that a feeling of envy has made them fearful of admitting Dr. Cooper's claims to originality, I am at a loss to account for their silence by any plausible conjecture.

It is probable that the majority of medical men, throughout the country, have felt with regard to the subject a good deal like myself, viz.: anxious to see or hear the opinions of some of the Societies I have mentioned, or of similar bodies, or of a few of the prominent leading surgeons; in hopes that the subject would be presented in several aspects, and we thereby enabled to systematize our opinions before presenting them, if it should happen that we had any worth making public. I anticipated that a majority of the profession would differ from Dr. Cooper's views; and I wished to see their statements and the grounds for difference fully set forth; that I might thereby obtain, perhaps, new reasons sufficient to modify or change my own opinions, which, I freely admit, were exactly those of Dr. Cooper. For a few years past, I had expressed to my professional acquaintances the same opinions that Dr. C. enunciates with regard to joints, and I meant at *some* time to publish them, and my reasons therefor; but, as yet, I had not sufficient confidence in my ability to defend them against the very considerable opposition which conversation on the subject, with my medical acquaintances, led me to expect; for I never found any one at all to agree with me. As to the cavity of the pleura, I held similar opinions; and I expected the support of Dr. Bowditch, of Boston, in maintaining them. With regard to the abdomen, I was undecided; for I had had but little experience with wounds of that part.

It has been after much hesitation that I am now so bold as to express an opinion on this subject in advance of my seniors; but I had lost hope of seeing the subject taken up by older heads and more experienced hands; and deeming it my professional duty to stir the matter up afresh, I have done so. I have purposely avoided a *discussion* of the subject, for the reasons expressed in the preceding paragraph, though I have cases on record for the purpose, if necessary. But I mean, if possible, to preserve this silence until I have seen a discussion of the subject by some of those who should

take precedence. It is quite possible that their views may lead to a change of mine. If so, I will make a due acknowledgment. If, on the other hand, those parties present all that is materially important in the case, and there be no great preponderance of opinion one way or the other, it would be useless for me to repeat *their* statements and reasons. In this way, time will be saved; whereas, the leaving of the subject as it is now—only to be settled by the separate and independent statements of each of all the physicians in the country—is a useless expenditure of time, and sometimes of talent. I trust that you, Messrs. Editors, as professional censors and directors of professional *thinking*, will see to the proper treatment of those *principles*. I append a copy, which you will please re-insert below. I am aware that you have published them once; and, as I think yours was the first JOURNAL in which I saw the article, I send this letter to you, hoping it may meet your approval.

Very respectfully, GEO. B. WILLSON,
Head Quarters 3d Reg't Mich. Infantry, } Late of Port Huron, Mich.
Camp Michigan, Va., Jan. 20th, 1862. }

NEW SURGICAL PRINCIPLES.—Prof. E. S. Cooper advances and urges the discussion of the following surgical principles :—

1st. That atmosphere, admitted into the joints or other tissues, is not a source of irritation or injury, except where it acts mechanically; as, when admitted into a vein, by producing asphyxia; into the thoracic cavity, by its pressure producing collapsing of the lungs, or when, by the long-continued exposure of a large amount of surface of any of the internal organs, whose normal temperature is much above that of the atmosphere, it reduces it so as to produce a morbid action.

2d. That the division of the entire ligaments about the joints is no impediment to their ultimate strength and mobility; but, on the other hand, this operation will often greatly facilitate the cure, by enabling the surgeon to open the affected part fully, for the purpose of applying medicinal substances to the articular surfaces, when these are ulcerated or otherwise diseased.

3d. That the only true mode of treating ulcerations of bone, however slight, within the joint, is to lay it open freely, and apply remedial agents directly to the part affected.

4th. That opening the joints early, in case of matter burrowing in them, is far more imperiously demanded than the opening of other parts thus affected, and the operation produces no further pain or inconvenience to the patient, in any respect, than when performed on parts remote from the joints.

5th. That after opening a large joint, the knee, for instance, by an incision several inches long, the wound should be kept open by the introduction of lint, or other similar substance, until the parts within the articulation become healthy, and in all cases it should be made to heal by granulation.

6th. That extensive wounds, opening freely the large joints, such as the knee (even when lacerated, as by a saw, which must necessarily heal by granulation), do not as often give rise to violent symptoms as very small wounds, such as are made by the corner of a hatchet, an adze, or a pen-knife, which heal on the outside by first intention.

7th. That there are no known limits beyond which a tendon will not or cannot be reproduced after division, provided the parts are made to heal by granulation, and that the present acknowledged rule of two inches being the maximum distance in which the divided ends of a ligament or tendon can safely be separated, has not the least foundation in fact.

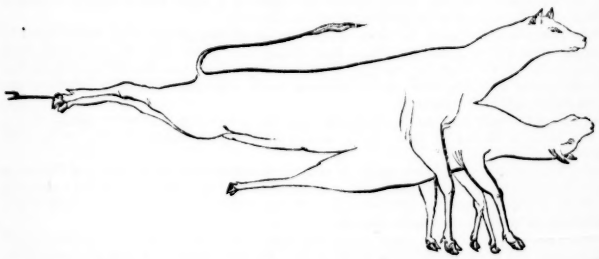
MONSTROSITY IN A CALF.

[Communicated for the Boston Medical and Surgical Journal.]

MESSRS. EDITORS,—The following case of "freak of nature" in a calf, occurred in this place a few weeks since, which perhaps you may think worth recording.

The calf was double, or partially so, one being natural and of the usual size and form, the other imperfect and diminished in size. They were connected at the breast, by a union of about fifteen inches; the walls of the chest being perfectly united, forming but one cavity. Their necks were of the same length, but the head of the smaller (which was cyclopean), was somewhat shorter and broader, more resembling that of a bull-dog; the eye was imperfect, situated in the centre of the forehead, and opened perpendicularly. One of the fore legs was normal in its form, the other double from the knee down, having one hoof on each bifurcation. These legs were reversed in their position, corresponding in their direction with those of the other calf. The hind part extended about to the umbilicus of the other, having but one leg, diminished in length, and projecting directly back, and ending with one hoof. There was no anus, nor organs to distinguish the sex.

The accompanying rough outline, sketched from memory, may aid in describing the appearance of the animal as it hung in sight.



P. S.—Since writing the above, I have heard that the calf, or its skin stuffed, has been on exhibition at the State House.

Sharon, Jan. 24. Yours respectfully, B.

Reports of Medical Societies.

EXTRACTS FROM THE RECORDS OF THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. BY FRANCIS MINOT, M.D., SECRETARY.

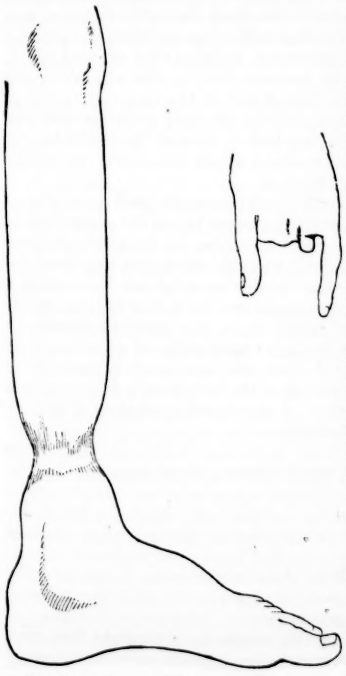
JAN. 13th, 1862. *Croup; Tracheotomy; Recovery.*—Dr. CABOT reported the following case.

A boy, 3 years old, was attacked with croup, and was first seen by Dr. CHAS. D. CLEAVELAND on Saturday, Nov. 9th. The symptoms

increased in severity, until Nov. 12th, when Dr. Cabot saw him. Dr. Cleaveland had seen false membrane in the throat and fauces for more than a day before, and it was visible on the morning of the 12th, though Dr. Cabot was unable to see it at his visit in the evening, perhaps on account of a thorough application of a solution of nitrate of silver in the morning.

The child had a loud, croupy, labored respiration; a small, weak and rapid pulse, not intermittent; and no decided lividity of the face. A flapping râle could be heard over both backs, with the tracheal sound, masking other sounds of respiration. Tracheotomy was decided upon, and performed. There was some venous hæmorrhage, which ceased on the admission of air to the lungs. The usual directions were given as to moist air, the injection of nitrate of silver, &c. The child, after expectorating a small amount of false membrane for several days, was so well at the end of a week after the operation that the tubes were removed. He has entirely recovered.

JAN. 13th. *Spontaneous Amputation in Utero.* Dr. C. E. WARE exhibited a sketch, from which the accompanying engraving was made, and which he had received from Dr. G. H. Lyman, Brigade Surgeon. The patient is a boy, who enlisted as a drummer, but was discharged by Dr. L. Two fingers are entirely gone, and a mere pedicle remains of the third. There is no muscular development between the knee and the contraction, the bones being covered with but little besides the skin, though very singularly the foot is well developed and useful. The sketch is by Dr. A. C. Hamlin, of the 2d Maine Regiment, and resembles very much some of the figures in Dr. Simpson's paper on the "Spontaneous Amputation of the Limbs of the Fœtus in Utero." (*Obstetric Memoirs and Contributions*, vol. ii., p. 328.)



JAN. 13th. *Old Fracture of the Skull.* Dr. CHEEVER showed the specimen.

The calvaria showed a nearly circular depression, larger than a silver dollar, involving portions of the right parietal and occipital bones and lambdoid suture. Two radiating lines of fracture ran off from it. But all the parts were entirely coössified. The inner table projected into the cranial cavity, with well-marked ridges. There is no history of the case. The patient died of pneumonia, and was a

man, apparently past 50 years of age. The brain was so softened before examination, that no changes of the meninges could have been detected had they existed.

The case is interesting as showing how so severe an injury as fracture and depression of the skull may be recovered from without trepanning, and apparently without serious sequelæ. It has been suggested that the mark of the injury was of such a character as to indicate that it was produced by a block falling from aloft, on board ship, rather than from a blow from a stick.

JAN. 13th. *Strangulation of the Small Intestine by a Fibrous Cord.*—Dr. ELLIS showed the specimen.

The patient, an Irish domestic about 19 years of age, while making a fire early in the morning, was attacked with severe pain in the umbilical region. Brandy and paregoric having been administered without relief, Dr. Flint was called at 10 o'clock, A.M., when the pain was very severe. There was unusual fulness of the umbilical region, but no distinct tumor. She was seen three or four times during the day, and relieved by nothing but ether. She vomited everything until evening, when she retained forty drops of the fluid extract of opium, and passed a comfortable night. On the following morning a cathartic pill was given, and followed by an enema, without the desired effect. Two doses of senna also failed to operate, and in the afternoon she complained much of pain, which, though not of the same character as before, was very severe. At three o'clock, the next morning, she was found dead on a night chair, having had a natural fæcal discharge. Two or three hours previous, she vomited a dark material. There was no fever, and but little if any tenderness.

On examination, the abdomen was found to contain perhaps a pint of bloody fluid. Many coils of the small intestine lay in the centre, much distended, and of a dark-red or blackish color, as from congestion. At some points, they adhered slightly to each other, but this was the only sign of inflammation. It was finally ascertained that several folds of the intestine were tightly constricted by a firm fibrous band, perhaps a line in diameter, extending from the sigmoid flexure to some part of the small intestine, but the exact point of attachment to the latter could not be ascertained after the necessary separation of some portions. After the withdrawal of the intestine, a knot was left in the cord. The included portion of the ileum, a number of feet in length, contained a thick, bloody fluid.

Other organs healthy.

JAN. 13th. *Dissection of a Gravid Uterus.*—Case reported by Dr. JACKSON.

The organ was sent to him, entire and perfectly fresh, by Dr. S. H. Carney, Physician to the State Almshouse at Bridgewater. It was taken from an unmarried woman, who had been consumptive for more than a year, and reported herself as about six months pregnant; her pulmonary symptoms having increased very rapidly after she became pregnant, and contrary to the usual rule.

Before dissection, the length of the organ, in a straight line, was 11½ inches, and its circumference, at the largest part, 20½ inches. The placenta being felt pretty distinctly through the posterior parietes, a crucial incision was made anteriorly. The cord ran over the left shoulder and around the neck. The child lay with the occiput towards the left acetabulum, was quite plump and healthy in appearance,

notwithstanding the circumstances under which the mother died, and it weighed 4½ pounds. A blowpipe having then been introduced into the uterine sinuses, they were inflated with moderate force, and the air very soon appeared beneath the fœtal surface of the placenta. One third or more of the placenta was next peeled off, and a very careful examination was made for any intervascular communication, but none was found; the usual appearance of crescentic openings from the uterine sinuses was seen, but nothing more. Lastly, a very nicely prepared, but "coarse injection" was thrown into the sinuses; but though it was extravasated to a considerable extent into the placenta, not the smallest vessel could be found to pass into the mass from the uterus.

JAN. 13th.—*Ovarian Cyst containing Hair, Teeth, &c.*—Dr. JACKSON showed the specimen, which he had received lately from Mr. James Ross, a medical student, and which was taken from a middle-aged dissecting-room subject. It was about two thirds as large as the fist, and was filled with a soft, yellowish fatty substance, with which was mixed a large quantity of loose hair. Upon the inner surface there was to some extent a pretty well-marked coarse cutis, with some remains of cuticle, but only a single hair was found attached. Near the skin, and just beneath the inner surface of the cyst, was a piece of bone, 1½ inches long, in connection with which were two teeth. Two or three quite small cysts were connected with the larger one. The other ovary, upon the left side, was about half as large as the above, and consisted of a number of cysts, all of which contained fat, and in one of which there was hair, with traces of skin, but nothing further.

Dr. J. remarked that he had never but once before met with a recent specimen of teeth in an ovarian cyst.

JAN. 13th. *A very Anomalous Tumor found in the Parietes of the Stomach.* The case occurred in the practice of Dr. Alfred Hitchcock, of Fitchburg; and the specimen, which had been in spirit for some time, was shown by Dr. JACKSON, to whom it had been recently sent. The tumor was situated in the posterior parietes, about equidistant between the orifices, and extended lengthwise to the organ 3 inches; the diameter was about 1½ inches, and it projected abruptly into the cavity from ⅛ of an inch to an inch; outline smooth, but form slightly lobulated. Externally, it also projected very abruptly into the peritoneal cavity; the form was more rounded than that of the internal tumor, and there projected from it several well-defined little tumors, the largest of which was about the size of a nutmeg. The diameter of this external portion was about two inches. As the muscular portion was very distinctly traceable to a considerable extent over this last portion, and the mucous membrane was continuous over the internal tumor, it was evident that it was situated in the submucous cellular tissue.

The structure was most remarkable. At the very extremity of the external portion was a mass, nearly the size of an English walnut, and which looked like the result of an old tubercular deposit; being quite firm or tough, pearly, with a large number of small, opaque, white spots, and a trace of cretaceous matter, but without any soft deposit. This mass was for the most part well defined, and there was nothing like it seen in any other part of the tumor. The mass above referred to as being of the size of a nutmeg, was of a dark-red color, uniform in appearance, and as soft as a quite soft spleen. The re-

mainder of the external portion looked not very unlike this last, but it was firmer and very much coarser in structure. The internal portion was firm at one extremity, but less so than a fibrous tumor would be. Towards the other extremity it was quite soft, as if the structure beneath was similar to that of the external portion, and in two places it looked as if the surface was about to give way. The interior of the tumor was occupied by a cavity of some size, well-defined, but rather disposed to branch, having two free openings upon the mucous surface, and extending nearly through to the old tubercular-looking mass; the openings, the abrupt elevation, the healthy mucous membrane over it, reminding one at once of Dr. Ware's case of fibrous tumor in the parietes of the stomach (Boston Med. & Surg. Journal for Aug. 26, 1858), and the case of similar tumors in the stomach of a tiger, an account of which was published in this Journal on the 9th of this month. In regard to the nature of the tumor, Dr. J. had never seen anything of the kind before, and could not pretend to give an opinion; Dr. Hitchcock thought that it did not resemble encephaloid, when recent. The other organs were well.

The following history of the case, by Dr. H., was then read:—

"Mrs. J. P., aged 67, died August, 1861. For a year before death she had nausea, gastric pain and anorexia. Vomiting very rarely occurred, although nausea and a distressing faintness existed nearly all the time for the last four months. Rising in bed, or turning from side to side, would increase these symptoms. Just before death there was vomiting of glairy mucus, with minute 'coffee ground' particles. For three months before death, a movable tumor could be felt in the epigastric region. No hereditary disease in the family."

Army Medical Correspondence.

Letter from Dr. Cyrus Powers, at Fort Pickens.

[Communicated for the Boston Medical and Surgical Journal.]

Fort Pickens, Florida, Jan. 17, 1862.

The 75th Regiment of N. Y. Volunteers have been here about a month, during which time but little has occurred of especial medical or surgical interest. There has been about the usual amount of sickness, of which, perhaps, an unusual per centage has been from dysentery—owing, doubtless, to the great difference of mean temperature between this place and Central New York, where the regiment was raised. The acute stage, if well treated, is not dangerous; but, as is always the case in warm climates, this malady has a vicious proclivity towards assuming the chronic form, and then it very often ceases only with the patient's life. Of this the Mexican war afforded far too many examples.

Fort Pickens is built on the extreme western end of Santa Rosa Island, which stretches along the Gulf Coast of Florida, a mile or two from the main land. The island is nearly or quite forty miles long (its western extremity being about forty miles south east of Mobile), and is entirely composed of intensely white sand—appearing, at a little distance, as if covered with salt or snow. Low evergreen shrubs and pitch-pine trees are sparsely scattered over the island. Nume-

rous ponds of fresh water abound, which, a few miles higher up, are the resort of wild fowl and alligators. Pure sweet water can be obtained anywhere, a few rods back from the sea, by digging a few feet, the fine clean sand acting as a great natural filter. When the sun shines, the reflected light from the intensely white surface is almost intolerable, giving rise to a peculiar and obstinate form of ophthalmia, resulting, in some instances, in total blindness. Its onset is sudden, and is characterized with great intolerance of light, and deep-seated pain, with but little external inflammation. Four of our own regiment are already under treatment for it, although, in fact, treatment seems to have but little control over it. Exclusion of light, cold water compresses to the eyes and temples, with low diet, seem to be somewhat efficacious. Several soldiers of the New York Sixth (Billy Wilson's regiment), who came here last May, have been sent home, nearly or quite blind.

The mainland sweeps around the west end of the island in a semicircle, and within the distance of about a mile and a quarter of Fort Pickens are three strong forts—"McRae," "Barancas," and the "Navy Yard"—which are occupied by ten or twelve thousand rebels, while we number only about two thousand, all told. On the afternoon and evening of January first, we had a regular bombardment, both sides blazing away with shot and shell. Several "contrabands," who have come over to us since, say that we injured their works considerably, burnt one large storehouse, and killed about twenty of their men. They did no damage whatever to Fort Pickens, but one of our men—a private of the sixth regiment—was wounded by a fragment of a shell, which passed through the upper part of the calf of the leg, tearing up the muscles. He was brought immediately to the Hospital, and, as the hæmorrhage was somewhat profuse, Drs. Pease and Lynch, surgeons of the sixth, applied persulphate of iron to the wound, which partially arrested it, and gave stimulants internally. Next day the oozing continued, the foot grew colder, and there was some slight delirium, with acceleration of pulse. Brandy and quinine were freely administered, and on the day following, extensive gangrene of the leg having supervened, it was concluded to amputate. This accordingly was done, at about the middle of the thigh, the patient being thoroughly chloroformed, but he did not rally, and died in an hour and a half. On examination of the removed limb, it was found that the piece of shell had chipped out a piece of the fibula near its neck (without fracture or dislocation), and had severed the peroneal artery. Doubtless, the extravasation and infiltration of blood into all the tissues, had, by its pressure, caused so much arterial and nervous obstruction, as to hasten, if not cause the death of the limb, as the anterior and posterior tibial arteries were intact.

Before closing, let me say a word respecting the treatment of diphtheria. In Camp Cayuga, in Auburn, N. Y., we had a good deal of it, and when I joined the regiment in November, I found that my associate, Dr. Benedict, the surgeon of the regiment, had employed what was to me a peculiar mode of treatment for the last two years, with great success, losing none out of more than a hundred cases since he had followed this practice, though he had lost several before he adopted it. On the first appearance of the unmistakable exudation, or as soon thereafter as the case is seen, a thorough emetic of sulphate of zinc is administered. I watched the subsequent cases with much

interest, and found that uniformly, in a few hours after the vitriolic emesis, the morbid growth began to disappear, and convalescence rapidly succeeded. Little after treatment seemed to be needed, though in the worst cases we sometimes gave chlorate of potash and quinine. With our change of climate, we have left this fell disease behind us, but I hope your numerous readers will give this remedy a fair trial, and report through your JOURNAL.

I had some other matters to speak of, but will defer it until another opportunity. CYRUS POWERS, *Assistant Surgeon 75th Regt. N. Y. Volunteers.*

To the Surgeon-General.

FORT COLUMBUS, NEW YORK HARBOR, January 25th, 1862.

SIR,—It is now some time since I last reported to you, and the absence of any occurrence particularly worthy of notice, together with plenty to do, has rendered it not worth while to write to you since. The health of the regiment is pretty good, considering the circumstances, and the men are becoming more satisfied with their quarters. The second, as well as the upper tier, has been furnished with stoves. The rations are good. The weather has not been very bad, though we have had a very severe storm within three days; and although it is cold to-day, it is nevertheless pleasant. Altogether, things are in a condition which might make an old soldier congratulate himself that they are not worse. Since writing to you last, my hospital accommodations have been increased by two more rooms, each one 14 feet by 20, flanking the large ward, which is about twice this size. The officers are the persons who now suffer the most, as they have not been provided with even decent quarters; but they generally try to find a bright side to the picture, and regret most that the icy plating with which the island is covered does not permit them to have proper drills.

Since coming here, I have had 30 persons in the hospital, averaging less than four days each. At present, there are but 8, and of these all are doing well. One man, of Co. C, entered with "pneumonia," right lung. He had been acting as "teamster," and applied for assistance only when he could no longer avoid it. For some days, he seemed on the piont of parting with us, but by the strictest attention on the part of the hospital steward, he is now convalescent. The crisis was passed yesterday, and he had sunk so low that an indescribable thrill of delight passed through me when, upon examining him in the morning, I felt that there was still "hope for the weary," and that there was no mortality yet to record.

The only other case worthy of especial notice is that of a strong, healthy man, who made his appearance with swelling of the submaxillary gland of the left side. It had been permitted to progress unmolested for two or three days before he presented himself for treatment. Blistering, bleeding, cathartics and low diet had but little effect in subduing it. The great pain was relieved by cupping and the application of poultices, but the swelling proceeded to the extent of involving the whole side of the face and neck, even to the eye, and spreading somewhat under to the other side, rendering the process of swallowing both painful and difficult. Within the last twenty-four hours the general tumefaction has begun to subside, becoming more distinctly prominent, however, and of about the size of a large marble, over the submaxillary gland. Upon opening it, this morning, much

pus was discharged. I know of no particular cause to which to attribute this case; but one more, of precisely similar character, and the only other that has yet occurred here, was in another man of the same company. In this last one, a blister, applied immediately over the part, produced early relief, and the swelling subsided so as to warrant the dismissal of the patient "well" in thirty-six hours.

Of other complaints, rheumatism has had the largest number of votaries; but almost all have been readily amenable to treatment. In these, the nitrate of potassa has seemed to act particularly well. Persons have been admitted to the hospital with flushed face, hot skin, rapid and full pulse, the feet, ankles and knees swollen and painful, and a few days has sufficed to fit them again for duty. Whether it depended upon the improvement in quarters, the diet, or medicinal treatment, I shall not pretend to say; but they got along very well without opiates, and nitrate of potassa was the only drug used. The change from poor to comfortable quarters undoubtedly had much to do with the recovery. How much, if any, had the potassa?

I remain, with respect, your obedient servant,

P. A. O'Connell,
Surgeon 28th Reg't Mass. Vols.

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON: THURSDAY, FEBRUARY 6, 1862.

With the present number commences the 66th volume of the Journal. The extraordinary state of public affairs, which has swept away no less than thirty of the medical journals of the country within the past year, has operated seriously to the disadvantage of this, more particularly in the loss of distant subscribers. We cannot, therefore, begin a new year with any enlargement in size, or other contemplated improvement requiring additional outlay; but we shall endeavor, in fulfilling our duties as journalists, to lay before the profession, week by week, such communications, society reports, reports of cases, and other medical intelligence, as may be deemed of sufficient interest. We would especially call attention to the army correspondence, as no unimportant item, and which will often be found instructive and valuable In the mean time we trust that those who have for so many years given the Journal their support, will not now forget its claims as the oldest weekly medical periodical in the country, and the only medical journal now published in New England.

There has been, for some time past, as is well known, a systematic attempt on the part of the friends of homœopathy, to secure for homœopathic practitioners a place in the military service of the United States, on an equal footing with army surgeons, one, and the principal object of this movement doubtless being the prestige which such a public recognition of the claims of homœopathy would necessarily gain for it. No time could have been more fitly chosen than the present for pressing upon the attention of the Government the extraordinary pretensions of this already decadent system, and the petitioners duly

estimate the importance of a decision favorable to their demand; knowing well that the result, if unsuccessful, will not tend to increase the popular confidence in its professions or its professors.

That the petitioners will fail in their efforts to accomplish their object, we are by no means sure; the urgent need that exists for medical officers in the army, and the utter ignorance of those who are called upon to decide this important question, lead us to fear a favorable consideration, and a result which, while it would be a manifest injustice to the medical profession, would virtually array the government on the side of one of the grossest and most barefaced systems of quackery that has ever disgraced the annals of medicine. It is to accomplish the latter object, that every effort is now being made, both in our own city and elsewhere, by petitions and other means, and it becomes the duty which the profession owes to humanity to be equally active in guarding itself as well as the country against an act which would seriously compromise the honor and dignity of both.

The New York *Medical Times*, in announcing the prompt action of the New York Academy of Medicine in this matter, very properly urges all local and State societies to follow their example. It is recommended that individual practitioners throughout the country should also forward at once remonstrances, signed by the citizens of their locality, to their representatives in Congress.

The following resolutions, prepared by Dr. Valentine Mott, were unanimously adopted by the New York Academy of Medicine, at a special meeting held on the 27th of January:

"*Whereas:* Petitions have lately been presented to the Senate and House of Representatives of the United States, for the employment of homœopathists as surgeons in the Army; therefore,

"*Resolved*, That the New York Academy of Medicine deem it their duty in the interest of the Army, respectfully to protest against the employment of such practitioners, for the following reasons:—

"1st. That the practice wherever subjected to accurate observation has failed to establish itself in any hospital.

"2d. That in the countries where it originated and attained its fullest degrees of development, it has not been introduced into the army or navy.

"3d. That it is no more worthy of such introduction than other kindred methods of practice as closely allied to quackery.

"4th. That such appointments would dissatisfy and dishearten the Medical Staff of the Army, who understand the true character of homœopathy, and who have entered the service of their country, with confidence that the government would strive to elevate the standard and promote the efficiency of the Medical Staff—results surely to be defeated by the appointment of homœopathists.

"*Resolved*, That a copy of the above resolutions be sent to the Hon. Ira Harris of the U. S. Senate, and the Hon. F. A. Conkling of the House of Representatives, with a request that the resolutions be presented to the two houses of Congress."

Interesting to Surgeons.—It will be seen by the following report, that the patent formerly held by Dr. W. T. G. Morton for the exclusive use of ether in surgical operations, has been finally declared to be "void, and the subject matter not patentable." We are indebted for this decision to a suit of Dr. Morton, in the U. S. District Court, New York, against the New York Eye Infirmary, for infringement of his rights as patentee, and the question is, it is hoped, now forever at rest. The plaintiff called as witnesses Drs. Wood, Griscom, Barker, Parker, Stansbie, Noyes and Edwards.

Dr. WEST testified that he used ether rather than chloroform. On being asked how many years he had used it, he said he hardly knew whether he ought to answer the question, as he might implicate himself in a suit, as this appeared to be the beginning of suits against the profession. Mr. Cozzens, the plaintiff's attorney, said they were ready to stipulate on the record that no advantage should be taken hereafter of the answers given by any of the witnesses. The witness then said he had always used it since Dr. Morton made it known. He described the mode of its administration, and what kind of cases he used it in, the quantities he used, and what were its effects. He did not use the machine described in the specification of the patent. Being asked what value was nowadays attached to its use in surgery, he said he did not think language could express it—but by this he afterwards said he did not mean monetary value, but benefit to the human race.

Dr. GRISCOM testified to nearly the same things. To the question as to its value, he said it would depend upon circumstances. If the operation was necessary, and could not be performed without ether, it was worth to the individual as much as his eyesight; but he could put no monetary value upon it. As to the proportion of surgical operations in which ether or chloroform was used, he could not say.

Dr. BARKER'S testimony was to the same effect. He also testified to the general use of ether in surgery, both in New York and Connecticut, where he formerly practised.

Dr. WILLARD PARKER went over nearly the same ground, saying it was of great value to the patient, but no extra charge was made for it by the surgeon; that it was entirely impossible to fix any value upon it, there being no standard to go by. If the thing were wiped out now, and could be brought back again by paying millions, millions would be paid. He further proved, on cross-examination, the general use of the article over the country, and said that Dr. Morton came to him in 1856 or 1857, and brought letters from physicians and surgeons in Boston; that he was aware of the subject, and aware of its being patented; and of course there was a prejudice in the profession against patentees, or having anything to do with them. Witness proceeded—I had a conversation with Morton about it, and he said that he had abandoned the patent, and was now throwing himself upon the humanity of the world; I then took him cordially by the hand, and introduced him to a large number of gentlemen in the profession; he made a statement at a meeting we had of what he had gone through with, and of his purpose with regard to the patent, and explained about a suit which had been commenced against the Chelsea Hospital; measures were taken by the profession here to raise funds for him; the New York Hospital paid him $500, and Bellevue $1,500; I went down to South street and raised several hundred dollars on the ground that he was a benefactor to the world. This was done on the idea that he had abandoned his patent, otherwise not a thing would have been done.

Re-direct.—I would not, because he was shielding himself under another garb; he had his patent to protect him, and we should have left him to that; don't know whether Bellevue Hospital purchased a license to use it with the $1,500.

Other witnesses testified as to the amount of ether used by defendants; as to the number of cases in which it had been used, no certain testimony could be obtained.

Judge SHIPMAN finally said that the patent had got to be discussed some time or other, and might as well be, before putting in any further testimony. The points as to the validity of the patent were then discussed at length by counsel on both sides. The Judge this morning (Jan. 30th) announced that he had come to the conclusion that the patent was void, and that the subject matter, under the circumstances, was not patentable. He therefore directed the jury to find a verdict for the defendants.

RAINSFORD ISLAND HOSPITAL, BOSTON HARBOR.—From the published Report of the Superintendent, we learn that during the four months following June 1, 1861, when the present Superintendent entered upon his duties, there were admitted into the hospital 230 patients, which with the 158 already there, make the whole number treated 388. Discharged during the four months, 196; died, 27; remaining Sept. 30th, 165. Of the 388 patients, 150 were born in the

United States, and 238 in foreign countries. The largest number of deaths from any one disease was 8, by consumption.

THE BUTLER HOSPITAL FOR THE INSANE, PROVIDENCE, R. I.—The last annual report of this institution shows that on the 31st of December, 1860, there were in the house 127 patients—68 males and 59 females. During the last year there were admitted 53—25 males and 28 females; making a total under treatment of 180. There were discharged during the year 45, and on the 31st of December, 1861, there remained 135. Dr. Ray, the Superintendent and Physician, gives very few statistical details, but his report is an unusually valuable and interesting one.

EIGHT CHILDREN AT A BIRTH.—On the 2d of August, Mrs. Timothy Bradlee, of Trumbull County, Ohio, gave birth to eight children—three boys and five girls. They are all living, and are healthy, but quite small. Mr. Bradlee was married six years ago to Eunice Mowery, who weighed 273 pounds on the day of her marriage. She has given birth to two pairs of twins, and now eight more, making twelve children in six years. Mrs. Bradlee was a triplet, her mother and father both being twins, and her grandmother the mother of five pairs of twins.—*Medical and Surgical Reporter.*

AT Fortress Monroe, during the month of December, there were taken sick 2783, of whom 32 were sent to the General Hospital for treatment; 2087 were returned to duty; 25 received furlough; 74 were discharged from service; 27 died; and there remained 288 sick and 653 convalescent.

VITAL STATISTICS OF BOSTON.

FOR THE WEEK ENDING SATURDAY, FEBRUARY 1st, 1862.

DEATHS.

	Males.	*Females*	*Total.*
Deaths during the week,	41	38	79
Average Mortality of the corresponding weeks of the ten years, 1851-1861,	40.9	34 7	75 6
Average corrected to increased population,	..	..	84.33
Deaths of persons above 90,	..	1	1

Mortality from Prevailing Diseases.

Phthisis.	Chol. Inf.	Croup.	Scar. Fev.	Pneumonia.	Variola.	Dysentery.	Typ. Fev.	Diphtheria.
12	0	1	8	5	0	0	1	2

METEOROLOGY.

From Observations taken at the Observatory of Harvard College.—For the week ending Jan. 25th.

Mean height of Barometer,	29.994	Highest point of Thermometer,	34.0
Highest point of Barometer,	30.150	Lowest point of Thermometer,	18 0
Lowest point of Barometer,	29.776	General direction of Wind,	North
Mean Temperature,	24.9	Am't of Rain (inches), including melted snow,	5.47

For the week ending Jan. 18th, omitted in our last issue:—Mean of barometer, 30.148; highest point of barometer, 30 636; lowest point of barometer, 29.450. Mean of thermometer, 23°; highest point of thermometer, 42°; lowest point of thermometer, 8°. General direction of wind, W. N. W. Amount of rain (in inches), including melted snow, 2.22.

TO CORRESPONDENTS.—Although the present number is enlarged to make room for valuable papers, the insertion of Dr. Bryan's Observations on Wounds in the Army, and other articles already acknowledged, is necessarily postponed till next week. Other communications are also on hand.

BOOKS AND PAMPHLETS RECEIVED.—A System of Surgery; Pathological, Diagnostic, Therapeutic and Operative. By Samuel D. Gross, M.D., &c. Illustrated by Twelve Hundred and Twenty-seven Engravings. Second Edition. In two volumes. Philadelphia: Blanchard & Lea. 1862. (From Ticknor & Fields.)—Reports of the Trustees and Superintendent of the Butler Hospital for the Insane, Providence, R. I.

DEATHS IN BOSTON for the week ending Saturday noon, February 1st, 79. Males, 41—Females, 38.—Apoplexy, 1—disease of the bowels, 2—inflammation of the bowels, 1—congestion of the brain, 1—disease of the brain, 2—bronchitis, 4—consumption, 12—convulsions, 3—croup, 1—cyanosis, 1—diphtheria, 2—dropsy, 3—dropsy of the brain, 3—drowned, 1—scarlet fever, 8—typhoid fever, 1—hæmoptysis, 1—disease of the heart, 3—infantile diseases, 6—intemperance, 1—disease of the liver, 1—inflammation of the lungs, 5—measles, 1—old age, 1—paralysis, 1—pleurisy, 2—scrofula, 1—sore throat, 1—suffocation, 1—suicide, 1—tumor (of neck), 1—unknown, 5—inflammation of the uterus, 1.

Under 5 years of age, 41—between 5 and 20 years, 10—between 20 and 40 years, 13—between 40 and 60 years, 6—above 60 years, 9. Born in the United States, 60—Ireland, 14—other places, 5.